27350
S/080/61/034/009/016/016
The synthesis of some diamino-ethers... D204/D305

A mixture of potassium phthalimide and "chlorex" was refluxed for 5-6 hours at 160-180° to obtain a viscous, brown mass which solidified on cooling. The water-soluble constituents were removed by boiling, and the residue consisting essentially of β,β'-diphthalimido-ethyl ether was extracted with alcohol, from which a fine grey powder was deposited. This was recrystallized from alcohol and then converted the chlorhydrate of β,β'-diaminodiethyl ether (Compound I) by allowing it to stand in contact with potassium hydroxide solution for 2-3 days, the solution being heated to dryness and finally neutralized with HCl. 4,4'-diaminodiphenyl ether (Compound II) was prepared by the traditional method of reducing the dinitrodiphenyl compound with tin and hydrochloric acid. The chlorhydrate of this compound had m.p. 185-186°. Polyterephthalimides were obtained by the interphase polycondensation method. The hydrochloride of compound I was used, and compound II being a weaker base was subjected to polycondensation with the chloranhydride of terephthalic acid. Tables are given of relationships of viscosity and yield of polyphthalimide based on compound I to

Card 2/3

quantity of alkali in the aqueous phase; and based on compound II to pH value of the medium. Thermomechanical tests showed that the polyamide based on compound I softens in the temperature range 200-230° and begins to melt above 260°; the polyamide based on compound II has a m.p. above 340°. Compounds with the simple ether bond as described are compared with those containing the methylene group. There are 2 tables, 1 figure, and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: V.S. Shashoua and W.M. Eareckson, J. Polymer Sci., XL, 343, 1959.

ASSOCIATION: Nauchno-issledovatel'skiy institut sinteticheskikh smol. g. Vladimir (Scientific Research Institute of Synthetic Resins g. Vladimir)

SUBMITTED: November 4, 1960

4

S/191/62/000/005/009/012
B110/B101

AUTHOR: Sokolov, L. B.

TITLE: Synthesis of polyoxamides in the gas phase

PERIODICAL: Plasticheskiye massy, no. 5, 1962, 45-47

TEXT: Instead of using liquid-liquid interface polycondensation for the production of polyamides, gas phase polycondensation of diamine with oxalyl chloride at the liquid-gas interface was proposed. This offers the following advantages: (1) application of oxalyl chloride in the gas phase reduces hydrolysis and thus increases yield and molecular weight; (2) yield and molecular weight are independent of the thickness of the aqueous layer and they increase with increasing temperature: $[\eta] = 0.85$ (95°C) yield = 2% (95°C) for polyhexamethylene oxamide. The yield may be increased up to 60%, the characteristic viscosity, up to 1.0; (3) polycondensation proceeds much faster under atmospheric pressure and at much lower temperatures than when the other methods are used; (4) it saves the use of an organic phase; (5) it permits the production of relatively low-melting polyoxamides on the basis of aliphatic diamines, and high-melting

Card 1/2

Synthesis of polyoxamides in ...

polyoxamides on the basis of aromatic diamines; (6) it allows of practical application and may easily be made continuous. The molecular weight depends on the reaction temperature, component concentration, the pH of the aqueous phase etc. There are 2 figures and 2 tables.

Card 2/2

SOKOLOV, L.B.; TURETSKIY, L.V.; TUGOVA, L.I.

Liquid - gas interfacial polycondensation. Part 2: Laws governing the gas phase synthesis of aromatic polyoxamides. Vysokom. soed. 4 no.12:1817-1821 D '62. (MIRA 15:12)

1. Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol.

(Oxamide) (Polymerization)
(Phase rule and equilibrium)

SAVINOV, V.M.; SOKOLOV, L.B.

Synthesis of high-molecular weight polyesters of oxalic acid.
Plast. massy no.11:65-67 '63. (MIRA 16:12)

ACCESSION NR: AT4033986 S/0000/63/000/000/0064/0067

AUTHOR: Astakhova, A. S.; Sokolov, L. B.

TITLE: Polycondensation on the liquid - gas boundary. V. On the gas-phase synthesis of polythiooxalates

SOURCE: Geterotsepny*ye vy*sokomolekulyarny*ye soyedineniya (Heterochain macromolecular compounds); sbornik statey. Moscow, Izd-vo "Nauka," 1963, 64-67

TOPIC TAGS: polymerization, polycondensation, boundary polymerization, liquid gas boundary, polythiooxalate, gaseous polymerization

ABSTRACT: In a procedure similar to that used by the authors for the synthesis of polyoxamides, a mixture of 12-15 vol. % gaseous oxalylchloride with nitrogen was passed through an aqueous solution of sodium dimercaptide. The resulting vapors and gases were passed through a concentrated $KMnO_4$-solution, and the polymer formed was separated by filtration, washed with hot water and dried to constant weight at 60-70C. The two polymers obtained, polytetramethylene-thiooxalate and polypentamethylenethiooxalate, are yellowish powders with melting points at 186-187 and 145C, respectively. The former swells readily in m-cresol but is insoluble in any common solvent while the latter dissolves

Card 1/2

S/190/63/005/002/003/024
B101/B102

AUTHORS: Sokolov, L. B., Astakhova, A. S.

TITLE: Polycondensation at the liquid - gas interface. III. Synthesis of polyoxamides in organic media in the gas phase

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 2, 1963, 176-182

TEXT: The synthesis of polyoxamides by bubbling gaseous oxalyl chloride through the aqueous solution of a diamine was described in Vysokomolek. soyed. 3, 1369, 1961. A disadvantage of that method was the solubility of oxalyl chloride in water, which led to its hydrolysis and to a reduced yield and molecular weight of the polymer. Now nitrogen containing 15% by volume oxalyl chloride was bubbled through 0.1 M organic solution of hexamethylene diamine at 110°C or at a temperature 3-5°C below the boiling point of the solvent. Results (solvent, yield (in %), reduced viscosity): water, 24, 1.08; dimethyl formamide, 3, 0.40; n-octane, 52, 0.31; p-xylene, 34, 0.24; nitro-benzene, 46, 0.22; chloro benzene, 60, 0.20; dibuthyl

Card 1/3

ether, 34, 0.20; dioxane, 36, 0.16; n-butanol, 11, 0.08; ethanol, 6, 0.08; pyridine, 0, 0. No connection was found between the surface tension and dipole moment of the solvent on the one hand and the yield of polyamide on the other. Suitable solvents were n-octane p-xylene; nitro- and chloro benzene. In pyridine, a complex of oxalyl chloride forms which prevents polymerization. Results of tests with p-xylene and nitro-benzene: yield and molecular weight increased with increasing temperature. The yield increased with increasing concentration of the diamine, reached a maximum with 0.2 mole/l, then decreased slightly and remained constant at > 0.35 mole/l. An increase in the concentration of oxalyl chloride in the gas phase was accompanied by a reduction in yield and molecular weight. As compared with water, no higher molecular weights were obtained. This is due to the solubility of the oxalyl chloride in the solvents, to precipitation of the diamine hydrochloride forming and to termination caused by the reaction of the HCl forming with the amino end group, which can be prevented in water by dissolution of the HCl or by reaction with an alkaline acceptor. There are 3 figures and 2 tables.

ASSOCIATION: Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol (Vladimir Scientific Research Institute of Synthetic Resins)

PETROV, A.A.; PORFIR'YEVA, Yu.I.; SOKOLOV, L.B.

Course of the reactions in which electrophilic and nucleophilic reagents are added to asymmetrical homologs of diacetylene. Dokl. AN SSSR 151 no.6:1343-1346 Ag '63. (MIRA 16:10)

1. Leningradskiy tekhnologicheskiy institut im. Lensoveta. Predstavleno akademikom B.A.Arbuzovym.

SOKOLOV, L.B.; TURETSKIY, L.V.

Liquid - gas interfacial polycondensation. Part 7. Vysokom.soed. 6 no. 2:346-351 F '64. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut sinteticheskikh smol, Vladimir.

SOKOLOV, L.B.; KUDIM, T.V.

Polycondensation in emulsions. Dokl. AN SSSR 158 no.5:1139-1142 O '64.
(MIRA 17:10)

1. Nauchno-issledovatel'skiy institut sinteticheskikh smol, Vladimir.
Predstavleno akademikom S.S.Medvedevym.

KRASNOV, Ye.P.; SOKOLOV, L.B.; POLYAKOVA, T.A.

Thermal degradation of polyamides. Part 2: Effect of impurities on the thermal degradation of polyoxamides. Vysokom. soed. 6 no.7:1244-1250 Jl '64 (MIRA 18:2)

1. Nauchno-issledovatel'skiy institut sinteticheskikh smol, Vladimir.

ACCESSION NR: AP4042187 S/0190/64/006/007/1261/1266

AUTHOR: Kuznetsov, G. A., Gerasimov, V. D., Sokolov, L. B.

TITLE: Investigation of the pressure sintering of powdered polymers. I. Ultrasonic evaluation of the change in contact between the particles of polymer powders

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 7, 1964, 1261-1266

TOPIC TAGS: polymer, powdered polymer, ultrasound, sintering, polymer particle contact, polymer structure, amorphous polymer, crystalline polymer

ABSTRACT: The measurement of the absorption and velocity of ultrasound passing through samples of polymer powder subjected to different degrees of pressure clarifies many problems concerning the mechanism of coalescence of materials, their imperfections (such as pores, voids, density variations) and the kinetics of their changes (in size and amount of imperfection during sintering). Kapron, polyhexamethylene oxamide, polyhexamethylene terephthalamide, polyvinyl chloride and polystyrene samples (5-7 mm thick, 30 mm in diameter for amorphous and 10 mm in diameter for crystalline polymers) were investigated. During the sintering of amorphous polymers under pressure, complete contact between the particles of polymer

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ACCESSION NR: AP4042187

powder is attained over the softe..ng temperature range. For crystalline polymers, no complete contact is obtained before melting. Their sintering below the melting point is due to the softening of the amorphous part. The annealing of crystalline powdered polymers renders sintering difficult. The curves plotted for the absorption and velocity of ultrasound for amorphous polystyrene and polyvinyl chloride samples against molding temperature at different frequencies show a sharp break. By increasing the frequency of the ultrasound, the beginning of the break is shifted toward higher temperatures and the sharpness of the break is increased. The variation in the steepness of the curves is explained by the correlation between the size of imperfections and the ultrasonic wavelength, assuming that there is a scattering of ultrasound on these imperfections due to powder particles or air inclusions. The velocity of ultrasound was near 2300 m/sec, at a frequency of 1 Mc/sec. for both polyvinyl chloride and polystyrene. This gives $\lambda = 2.3$ mm, and at 10 Mc/sec. $\lambda = 0.23$ mm. For crystalline polymer such as kapron, no plateau was found in the ultrasonic velocity-molding temperature plots, but after the inflection of the curve a monotonous rise was observed which becomes more pronounced in the melting temperature range. The curves and experimental data for amorphous and crystalline polymers are compared and discussed in detail. Orig. art. has: 4 figures, 1 table and 2 formulas.

2/3
Card

ACCESSION NR: AP4042187

ASSOCIATION: Nauchno-issledovatel'skiy institut sinteticheskikh smol, Vladimir (Scientific Research Institute for Synthetic Resins)

SUBMITTED: 02Aug63 ENCL: 00

SUB CODE: OC, MT NO REF SOV: 004 OTHER: 001

3/3
Card

SAVINOV, V.V.; SOKOLOV, L.B.; FEDOROV, A.A.

Effect of the acidity of diols on the hydrolytic stability of oxalic acid polyesters. Vysokom. soed. 6 no.7:1335-1339 Jl '64 (MIRA 18:2)

1. Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol.

GORFIR'YEVA, Yu. I.; PETROV, A. A.; SOKOLOV, L. B.

Regularities in the addition reactions of diacetylenes. Part 1: Course of the addition of bromine and hydrogen bromide to the nearest unsymmetrical diacetylene homologs. Zhur. ob. Khim. 34 no.6:1871-1881 Je '64. (MIRA 17:7)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

PORFIR'YEVA, Yu. I.; SOKOLOV, L. B.; PETROV, A. A.

Regularities in the addition reactions of diacetylenes. Part 2: Course of the addition of mercaptans o to nearest unsymmetrical diacetylene homologs. Zhur. ob. Khim. 34 no.6:1881-1886 Je '64. (MIRA 17:7)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

L 19743-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10 RPL
WW/RM/MLK

ACCESSION NR: AT4049868 S/0000/64/000/000/0275/0281

AUTHOR: Krasnov, Ye. P., Sokolov, L. B. B+1

TITLE: Thermal decomposition of polyamides. I. Kinetic laws of the thermal decomposition of polyamides of different chemical structures.

SOURCE: Khimicheskiye svoystva i modifikatsiya polimerov (Chemical properties and the modification of polymers); sbornik statey. Moscow, Izd-vo Nauka, 275-281

TOPIC TAGS: polyamide, polyamide thermal stability, polyamide structure, polymer degradation kinetics, aromatic polyamide, polyamide viscosity

ABSTRACT: An experimental study of the thermal decomposition of various polyamides showed that the degassed specimens all decomposed between 300 and 360C, but that the start of decomposition within this interval and the rates and activation energies depended significantly on the chemical composition of the polymer and on the method of condensation. The study covered polydecamethyleneoxamide, polyhexamethyleneoxamide, polyhexamethyleneterephthalamide, poly-p- and poly-m-phenyleneoxamide, and poly-(4,4'-diaminodiphenyl)oxamide, produced by gas-, melt-, or mixed-phase polycondensation. Introduction of aromatic groups, either as aromatic acids or as aromatic amines, increased the thermal stability, and stability increased according to the diamines in the order hexa-

Card 1/2

L 19743-65
ACCESSION NR: AT4049868

3

methylenediamine < decamethylenediamine < m-phenylenediamine < p-phenylenediamine < 4,4'-diaminodiphenyl. The apparent activation energies were shown in most cases to be significantly different at lower and at higher temperatures, where different types of reactions occur. The effect of the phase of condensation was shown particularly clearly by the viscosity of thermally treated specimens. The viscosity of aliphatic compounds increased, and that of aromatic compounds decreased with an increase in temperature if the polymer had been prepared by gas phase or mixed phase condensation, and the effect was detectable at low temperatures and before the start of decomposition. A similar increase in the viscosity of aliphatic polyamides produced in the melt phase occurred at higher temperatures only. Effects of solid-phase condensation in thermally treated polyamides are discussed. "The authors thank L. V. Turetskiy and V. M. Savinov for providing the samples of polyamide used in this study." Orig. art. has: 2 tables and 8 graphs.

ASSOCIATION: Vladimirsky nauchno-issledovatel'skiy institut sinteticheskikh smol (Vladimir Scientific Research Institute for Synthetic Resins)

SUBMITTED: 25Jul63 ENCL: 00 SUB CODE: OC

NO REF SOV: 009 OTHER: 004

Card 2/2

L 21212-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/JW/RM

ACCESSION NR: AP5001475 S/0190/64/006/012/2117/2121

29

AUTHOR: Sokolov, L. B.

TITLE: Polycondensation at the gas-liquid interface. VIII. The selection of reaction systems for vapor phase polycondensation

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 12, 1964, 2117-2121

TOPIC TAGS: polycondensation, vapor phase polycondensation, polyamide synthesis, polythioamide synthesis, polythioester synthesis, fluorinated polyamide

ABSTRACT: Polycondensation at the gas-liquid interface has been studied with selected reaction systems to investigate the applicability of the method and the increase in molecular weight and yield with temperature which had been established by L. B. Sokolov et al. (Vysokomolekulyarnyye soyedineniya v. 3, 1369, 1961). The experimental technique described in the earlier work was used, and aliphatic or aromatic polyamides, polythioamides, polythioesters, or fluorinated polyamides were prepared by reacting hexamethylenediamine, decamethylenediamine, p- or m-phenylenediamine, benzidine, p-xylylenediamine, pentamethylenedithiol, or ethylenediamine with oxalyl chloride or fluoride, phosgene, carbon suboxide, thiophosgene, or perfluoroadipyl dichloride. The method was shown not to be usable for reacting ethylenediamine, piperazine or diphenols with oxalyl chloride, hexa-

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L 21212-65
ACCESSION NR: AP5001475

methylenediamine with higher two-basic carboxylyl dichloride, or p-phenylenediamine or diphenols with phosgene. A mathematical model for the thermodynamic feasibility of the method is presented, accounting for the heat of solution. The reaction is favored by the excess of activation energy of hydrolysis of gas-phase monomer over the activation energy of polymerization. General requirements for the reaction systems are: high reaction rates of polycondensation, relatively high vapor pressures of vapor phase monomers at the reaction temperature, and low solubility of this monomer in the aqueous phase. Orig. art. has: 2 tables and 7 formulas.

ASSOCIATION: Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol (Vladimir Scientific Research Institute for Synthetic Resins)

SUBMITTED: 13Jan64 ENCL: 00 SUB CODE: OC

NO REF SOV: 004 OTHER: 002

Card 2/2

SAVINOV, V.M.; SOKOLOV, L.B.

Obtaining the reaction sirups of aromatic polyamides suitable for the formation of fibers. Khim. volok. no.4:22-25 '65.
(MIRA 18:8)

1. Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol.

L 34850-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM

ACCESSION NR: AP5008548 S/0286/65/000/006/0061/0061

AUTHOR: Sokolov, L. B.; Astakhova, A. S.; Ryzhova, L. A.

TITLE: A method for producing polyamides which contain fluorine. Class 39, No. 169248

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 6, 1965, 61

TOPIC TAGS: polyamide plastic, fluorine

ABSTRACT: This Author's Certificate introduces a method for producing polyamides which contain fluorine. The technological process is simplified by passing gaseous perfluoro-carboxyl chloride through an aqueous solution of an aliphatic or aromatic diamine at a temperature of 90-100°C.

ASSOCIATION: none

SUBMITTED: 17Apr61 ENCL: 00 SUB CODE: MT, GC

NO REF SOV: 000 OTHER: 000

Card 1/1

L 41584-65 EWT(m)/EPF(c)/EPR/EWP(j)/EWA(c) Pc-4/Pr-4/Pe-4 RPL WW/JW/RM
ACCESSION NR: AP5008720 S/0366/65/001/003/0610/0611

35
B

AUTHORS: Sokolov, L. B.; Porfir'yeva, Yu. I.; Petrov, A. A.

TITLE: Direction of addition of diazomethane to diacetylene homolog

SOURCE: Zhurnal organicheskoy khimii, v. 1, no. 3, 1965, 610-611

TOPIC TAGS: methane, acetylene, alcohol, carbonic acid

ABSTRACT: It is shown that the homolog of diacetylene attaches to diazomethane in a reaction in which acetylene and groupings take a primary part. From methyldiacetylene and diazomethane in alcohol, 5-propynylpyrazole was obtained with a boiling temperature of 112-114C and a melting point at 71-72C. Ethyldiacetylene and diazomethane produced 5-butynylpyrazole with a boiling point at 120-122C and a melting point at 38-39C. By oxidizing both alkynylpyrazoles, 5-pyrazolecarbonic acid is obtained with a 212 to 213.5C melting point.

ASSOCIATION: Leningradskiy tekhnologicheskiy institut imeni Lensoveta (Leningrad Technological Institute)

SUBMITTED: 20Nov64 ENCL: 00 SUB CODE: OC

NO REF SOV: 000 OTHER: 003

Card 1/1 mc

L 45408-65 EPF(c)/EWP(j)/EWA(c)/EWT(m)/T Pc-4/Pr-4 RPL JW/RM

ACCESSION NR: AP5011245 UR/0190/65/007/004/0601/0605

30
37
B

AUTHOR: Sokolov, L. B.

TITLE: Basic principles of emulsion polycondensation

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 4, 1965, 601-605

TOPIC TAGS: emulsion polymerization, diamine, polyamide, interphase zone

ABSTRACT: The author states that this paper is the first of a series devoted to the study of the rules governing emulsion polycondensation, in which he discusses the experimentally established basis for the emulsion polycondensation process as observed in the reaction of polyamidation of diamines and dichloroanhydrides. In the polycondensation of diamines and dichloroanhydrides of carboxylic acids, the essential and necessary conditions must be a large proportion of diamine in the two-phase system (i.e., the ratio of diamine to H_2O must be much greater than one), and the HCl acceptor must be mostly in the aqueous phase (i.e., the ratio of the acceptor to water must be much less than one). The optimal conditions for the process are thus obtained when the first ratio approaches infinity, the second approaches zero. It is concluded that emulsion polycondensation takes place in the kinetic zone, in contrast to

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L 45408-65

ACCESSION NR: AP5011245

3

interphase condensation, which occurs in the diffusion zone. This indicates that emulsion polycondensation must be similar to that in melts and solution. An analysis of different polycondensation reactions from the point of view of localized reaction zones establishes a series: gas-phase → interphase → emulsion → solution. This represents an expansion of the reaction zone from a narrow layer to the entire volume. "Experimental data used in this work were obtained by T. V. Kudiy and T. L. Zhanina, to whom the author expresses his sincere thanks." Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol (Vladimir Scientific Research Institute of Synthetic Resins)

SUBMITTED: 18May64 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 006 OTHER: 003

Card 2/2 mb

SOKOLOV, L.B.; KUDIM, T.V.

Effect and role of HCl acceptors in emulsion polyamidation in the presence of aromatic reagents. Vysokom. soed. 7 no.4:634-637 Ap '65. (MIRA 18:6)

1. Nauchno-issledovatel'skiy institut sinteticheskikh smol, Vladimir, prigorod Moskvy.

L 57057-65 EPF(c)/EWP(j)/EWT(m)/T Pc-4/Pr-4 RM
ACCESSION NR: AP5013051 UR/0190/65/007/005/0772/0777
678.675

24
23
B

AUTHORS: Savinov, V. M.; Sokolov, L. B.

TITLE: Some specific features in the synthesis of aromatic polyamides in amic solvents

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 5, 1965, 772-777

TOPIC TAGS: organic synthesis, aromatic polyamide, polymerization

ABSTRACT: The acylation of amines with acyl chlorides in dimethylformamide and dimethylacetamide was studied as part of an investigation on possible use of these solvents for synthesizing polyamides. The use of mixed solvents in the synthesis was also studied. Preliminary solution of the chlorides in dimethylacetamide and substitution of dimethylformamide for dimethylacedamide (because it is more accessible and cheaper) caused a sharp decrease in molecular weight of the polymer product. In the first case, the cause was found to be impurities: dimethylamine and water. Removal of the impurities solves this problem. For dimethylformamide it was found that side reactions are more aggressive than the main polymerization reaction, and for this reason this solvent must be considered

Card 1/2

L 51057-65

ACCESSION NR: AP5013051

unsuitable for producing molecules of high molecular weight. Partial substitution of chlorides of the diamines for the diamines proved to be possible without reduction of the molecular weight of the polymeric product. Complete replacement is not possible because of the limited solubility of the salts. This solubility may be improved, however, by using a solution containing the diamine in the solvent. In this way, up to 50% replacement was effected without reducing the weight of the resulting polymer. Increase in solubility of the salt is due to exchange of HCl between the salt and the diamine. Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut sinteticheskikh smol, Vladimir (Scientific Research Institute of Synthetic Resins)

SUBMITTED: 12Jun64 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 003 OTHER: 008

Card 2/2

L 2928-66 ENT(m)/EPF(c)/ENP(j)/T/EWA(c)/ETC(m) WW/RM

ACCESSION NR: AP5022606 UR/0190/65/007/009/1592/1596
678.01:53+678.675

AUTHORS: Kuznetsov, G. A.; Gerasimov, V. D.; Fomenko, L. N.; Maklakov, A. I.; Pimenov, G. G.; Sokolov, L. B.

TITLE: The nature of the transitions in polymetaphenyleneisophthalamide

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 9, 1965, 1592-1596

TOPIC TAGS: polymer, resin, thermomechanical property, x ray, nuclear magnetic resonance, thermal stability, phenylone

ABSTRACT: The nature of the transitions of polymetaphenyleneisophthalamide (phenylone) was investigated by thermomechanical, differential thermal, x-ray, and nuclear magnetic resonance methods. It was desired to determine the best conditions for producing polymers of high thermal stability with improved film and fiber properties. A powdery specimen with a viscosity higher than 1.0 in sulfuric acid and a 5% moisture content was used. The experimental conditions are described. It was found that the initially amorphous phenylone crystallizes upon heating. The thermomechanical curves plotted at a load of 0.8, 6, and 1000 kg/cm^2 show that the glass temperature of phenylone is 280C. The x-ray

Card 1/2

L 2928-66

ACCESSION NR: AP5022606

diagrams of amorphous and crystalline phenylone were taken at 26, 100, 286, 356, and 433C. The thermomechanical curve is interpreted on the basis of the data of differential thermal analysis and of x-ray study. After softening at 300C, the polymer starts to crystallize. The range of steady deformation lying at 340-400C corresponds to the crystalline state of phenylone. Heating above 400C causes decomposition, while melting sets in at 430C. The second moment of the absorption line of nuclear magnetic resonance is plotted against temperature for the initial amorphous polymer and for a specimen preheated to 360C. The character of the curves is discussed. It was found that the increase in ΔH_2^2 of the preheated specimen over all temperature ranges produces a smaller mobility and better packing of the molecules, indicative of the crystallization process. The disappearance of the highly elastic state below the melting point of the crystalline substance explains the absence of the minimum on the ΔH_2^2--temperature curve in the range of 290-320C. Orig. art. has: 5 figures.

ASSOCIATION: Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol (Vladimir Scientific Research Institute of Synthetic Resins); Kazanskiy gosudarstvennyy universitet (Kazan State University)

SUBMITTED: 19Oct64 ENCL: 00 SUB CODE: OC, OC

NO REF SOV: 005 OTHER: 001

Card 2/2

SOKOLOV, L.B.; KUDIM, T.V.

Effect of the ratio and composition of phases in the emulsion polycondensation of aromatic diamines and acyl dichlorides. Vysokom. soed. 7 no.11:1899-1904 N '65. (MIRA 19:1)

1. Vladimirskiy nauchno-issledovatel'skiy insitut sinteticheskikh smol. Submitted December 7, 1964.

GORSHKOV, L.P.; TURETSKIY, L.V.

Relation between heterophase copolycondensation constants and the adsorption characteristics of monomers. Vysokom. soed. 7 no.11:1997-2000 N '65. (MIRA 19:1)

1. Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol. Submitted January 5, 1965.

L 23075-66 EWT(m)/EWP(j)/T WW/RM

ACC NR: AP6010104 (A) SOURCE CODE: UR/0190/66/008/003/0380/0386

AUTHORS: Krasnov, Ye. P.; Savinov, V. M.; Sokolov, L. B.; Loginova, V. I.; Belyakov, V. K.; Polyakova, T. A.

ORG: Vladimir Scientific Research Institute of Synthetic Resins (Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol)

TITLE: Thermal degradation of isomeric aromatic polyamides

SOURCE: Vysokomolekulyarnyye soyednieniya, v. 8, no. 3, 1966, 380-386

TOPIC TAGS: polyamide, terephthalic acid, pyrolysis, discarbolic acid, isomer, thermal stability, thermal effect, mass spectrometry, chromatographic analysis, heat resistance

ABSTRACT: A thermal decomposition in vacuo of four isomeric aromatic polyamides based on phenylenediamines and terephthalic acids has been investigated. The composition of the gaseous and liquid products of the polyamides pyrolysis was analyzed by means of mass spectrometry and gas liquid chromatography. It was shown that the heat resistance of polyamides greatly depends on the isomeric form of the starting phenylenediamines and dicarboxylic acids. The polyamide chain is the most stable with para-isomers and the least stable with metha-isomers.

UDC: 678.01:54+678.675

Card 1/2

L 23075-66

ACC NR: AP6010104

On the basis of kinetic data and the results of the parolysis product analysis, the causes were suggested that for different thermal stabilities of polyamides and for the thermal decomposition of isomeric aromatic polyamides. Orig. art. has: 5 figures and 2 tables. [Based on author's abstract] [NT]

SUB CODE: 07, 11/ SUBM DATE: 01Feb65/ ORIG REF: 006/
OTH REF: 006/

Card 2/2 JCR

L 27331-66 EWT(m)/EWP(j)/T IJP(c) RM/JW

ACC NR: AP6008969 (A) SOURCE CODE: UR/0190/65/007/011/1899/1904

AUTHORS: Sokolov, L. B.; Kudim, T. V.

ORG: Vladimir Scientific Research Institute of Synthetic Resins (Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol)

TITLE: Effect of the phase ratio and composition on the emulsion polycondensation of aromatic diamines and acyl dichlorides

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 11, 1965, 1899-1904

TOPIC TAGS: copolymer, emulsion polymerization, amine, aromatic compound

ABSTRACT: It was the object of this investigation to determine the effect of phase composition on the emulsion polycondensation of m-phenylenediamine and isophthalyl chloride in the system tetrahydrofurane-water-sodium carbonate. The experimental procedure followed that of L. B. Sokolov and T. V. Kudim (Vysokomolek. soyed., 7, 634, 1965). The molecular weight, solubility in dimethylformamide and dimethylacetamide, and viscosity of the polymer were determined as functions of the phase composition and of the emulsifying medium composition. The experimental results are presented in graphs and tables (see Fig. 1). It is concluded that water catalyzes the main reaction by increasing the polarity of the medium, and it is suggested that a low value of the surface tension is a characteristic property of

Card 1/2 UDC: 541.64+678.675

L 27331-66

ACC NR: AP6008969

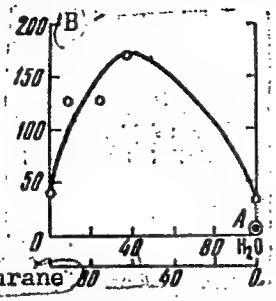


Fig. 1. Dependence of the solubility of m-phenylenediamine in mixtures of tetrahydrofurane-water-sodium carbonate on the composition of the mixture. Point A - solubility of m-phenylenediamine in aqueous sodium carbonate solution (0.66 mole/liter). Ordinate - solubility g/100 ml (B).

an emulsion polycondensation reaction. Orig. art. has: 3 tables, 2 graphs, and 1 equation.

SUB CODE: 11/ SUBM DATE: 07Dec64 ORIG REF: 007/ OTH REF: 001

Card 2/2

L 27326-66 EWT(m)/EWP(j)/T IJP(c) WW/RM

ACC NR: AP6008986 (A) SOURCE CODE: UR/0190/65/007/011/1997/2000

AUTHORS: Sokolov, L. B.; Turetskiy, L. V.

ORG: Vladimir Scientific Research Institute of Synthetic Resins (Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskihk smol)

TITLE: Relation between heterophase copolycondensation and monomer absorption characteristics

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 11, 1965, 1997-2000

TOPIC TAGS: polycondensation, copolymer, absorption, polymerization absorption, monomer

ABSTRACT: This investigation was conducted to extend an earlier published work of L. V. Turetskiy, L. B. Sokolov, and V. Z. Nikonov (Sb. Geterotsepnyye vysokomolekulyarnyye soyedineniya, izd. Nauka, 1964, str. 107). It was desired to determine the role of adsorption processes in a heterogeneous copolycondensation (gas-liquid) reaction. The relationship

$$\ln 1/r = \Delta n \cdot \ln \beta$$

was tested on a number of results obtained earlier, L. B. Sokolov, and L. V. Turetskiy (Vysokomolek. soyed., 6, 346, 1964), where r and r_0 are the apparent and true copolycondensation constants, Δn is the difference in the number of repeating numbers in

Card 1/2 UDC: 541.64

the reacting molecules A and B, and β is Traube's coefficient. The results of the test are presented graphically. It was found that $\ln 1/r$ was a linear function of Δn, and that the values of β for the CH_2 group for the homologous series of aliphatic compounds (as derived from the slope of the straight line) are in good agreement with published values, derived from surface tension measurements. It is concluded that adsorption processes play a dominant role during heterophase copolycondensation. Orig. art. has: 1 table and 1 graph.

SUB CODE: 11/ SUBM DATE: 05Jan65/ ORIG REF: 009/ OTH REF: 001

L 10420-67 EWT(m)/EWP(j) IJP(c) RM
ACC NR: AP6029917 (A) SOURCE CODE: UR/0413/66/000/015/0088/0088

AUTHORS: Savinov, V. M.; Sokolov, L. B.; Lobedev, A. I. 21

ORG: none

TITLE: A method for obtaining polyamides. Class 39, No. 184441 [announced by Vladimir Scientific Research Institute of Synthetic Resins (Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh smol)]

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 88

TOPIC TAGS: polyamide, polycondensation, emulsion

ABSTRACT: This Author Certificate presents a method for obtaining polyamides by polycondensation of dichloranhydrides of acids and diamines in a solution or emulsion. To complete the technological process, one of the monomers is taken in excess and is gradually introduced into the reactive zone.

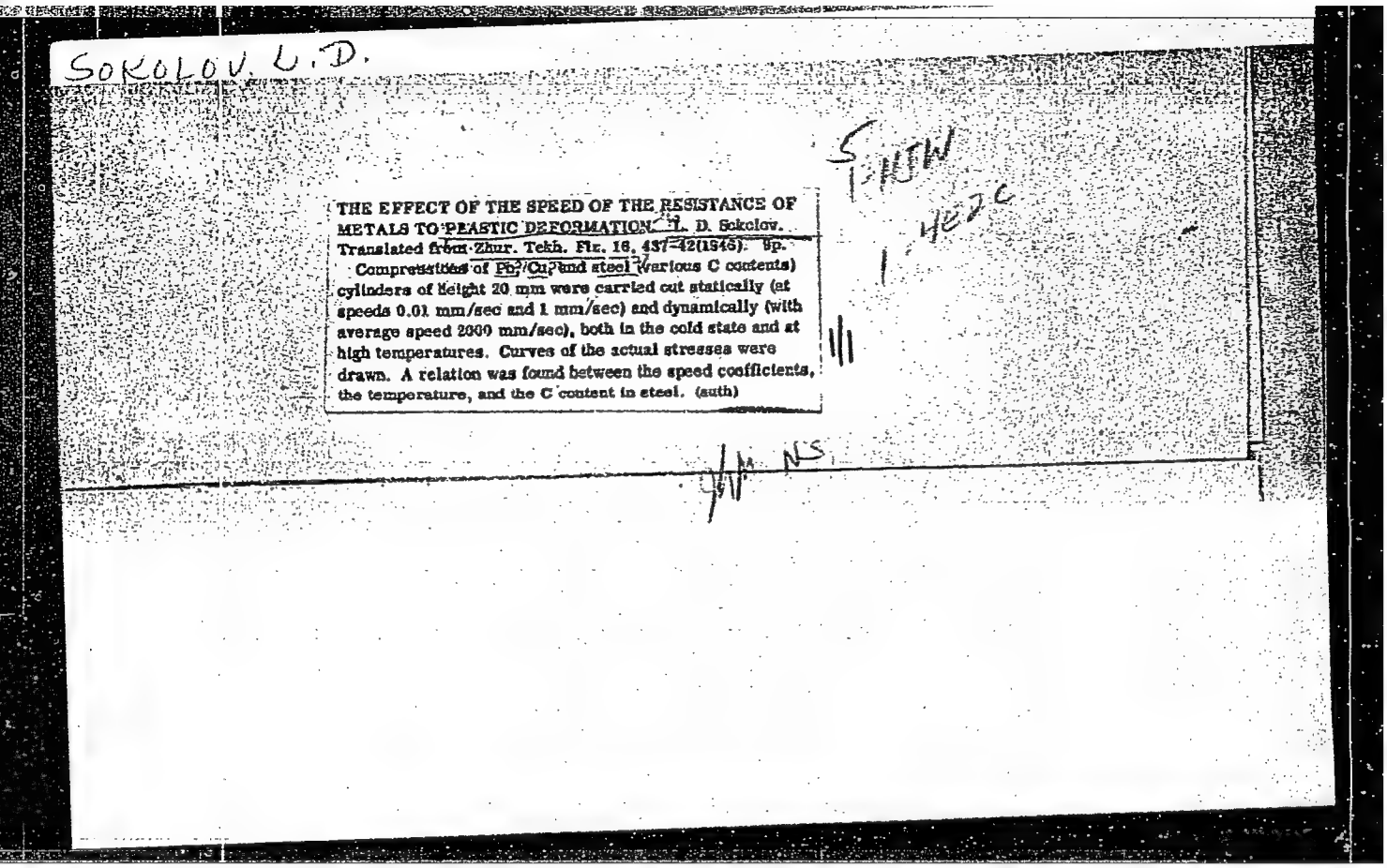
SUB CODE: 07 / SUBM DATE: 24Apr64

Card 1/1 fvp

UDC: 678.675

Sokolov, L. D.

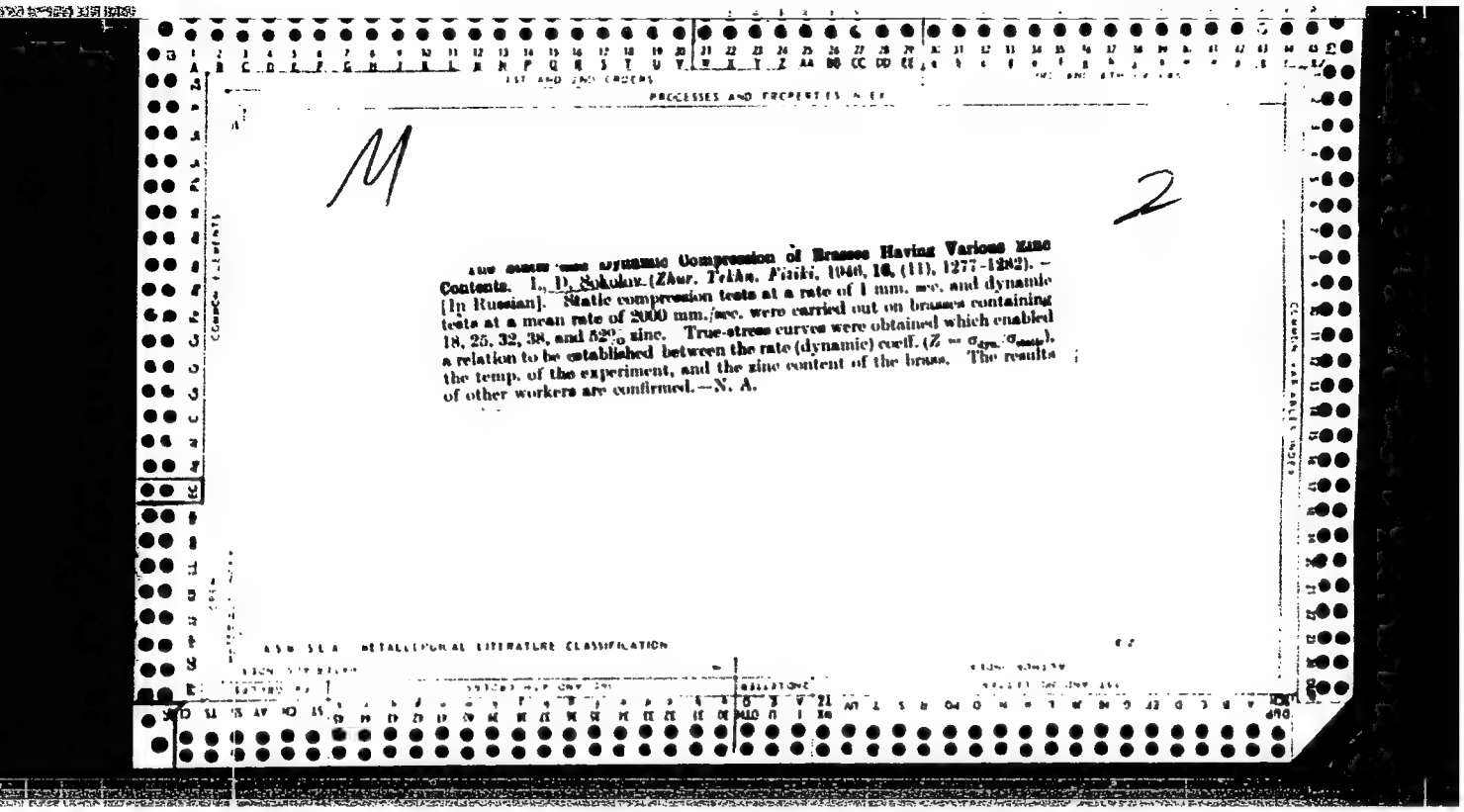
"On the Problem of Nonuniformity of Deformation in Rolling", Stal', 1946, Nr 6, p 375.



SOKOLOV, L. D.

THE EFFECT OF THE SPEED OF THE RESISTANCE OF METALS TO PLASTIC DEFORMATION. L. D. Sokolov. Translated from Zhur. Tekh. Fiz. 16, 437-42(1946). 6p.

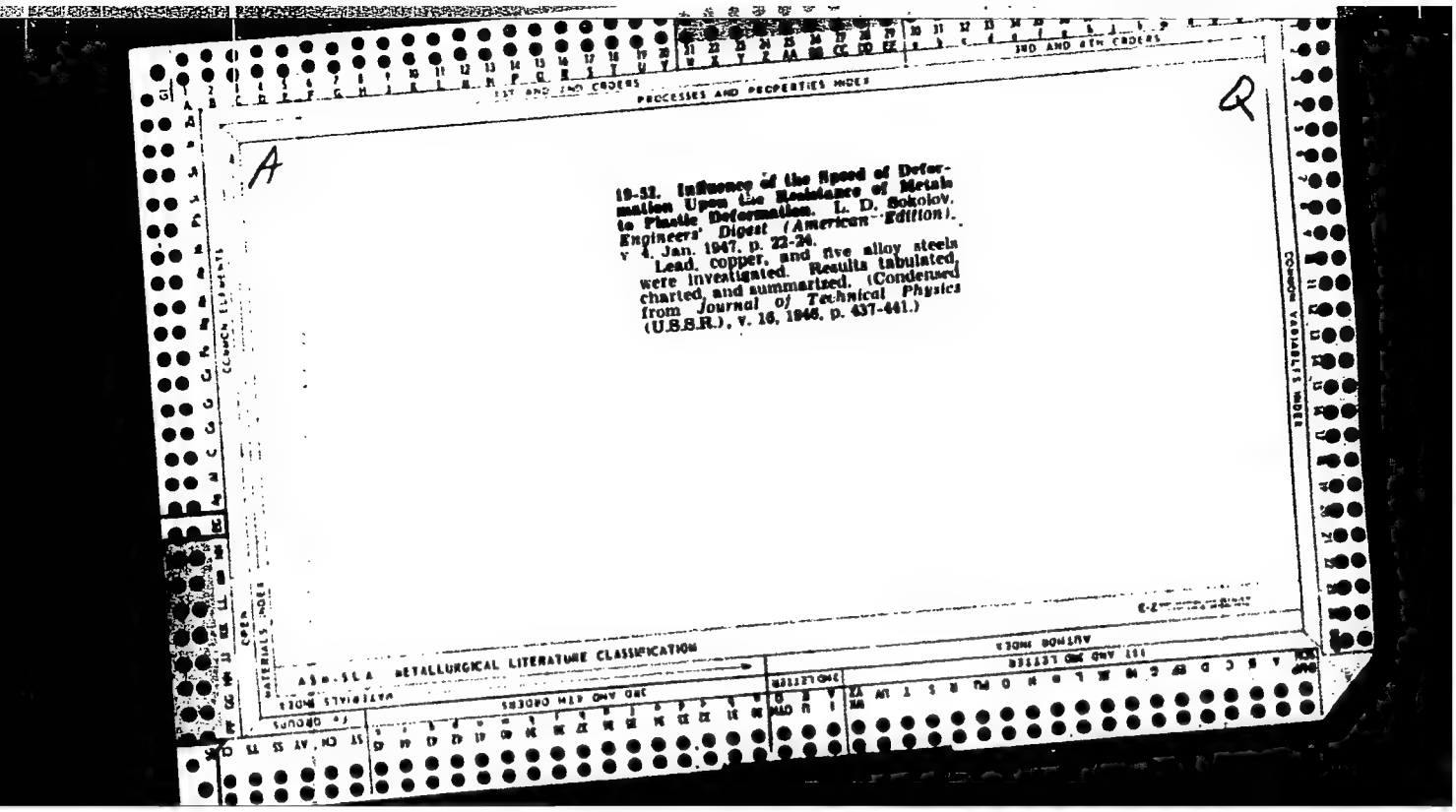
Compressions of Pb, Cu and steel (various C contents) cylinders of height 20 mm were carried out statically (at speeds 0.01 mm/sec and 1 mm/sec) and dynamically (with average speed 2000 mm/sec), both in the cold state and at high temperatures. Curves of the actual stresses were drawn. A relation was found between the speed coefficients, the temperature, and the C content in steel. (auth)



M

2

Dynamic Compression of Brasses Having Various Zinc Contents. L. D. Sokolov. (*Zhur. Tekhn. Fiziki*, 1940, **10**, (11), 1277–1282). — [In Russian]. Static compression tests at a rate of 1 mm./sec. and dynamic tests at a mean rate of 2000 mm./sec. were carried out on brasses containing 18, 25, 32, 38, and 52% zinc. True-stress curves were obtained which enabled a relation to be established between the rate (dynamic) coeff. ($Z = \sigma_{dyn.}/\sigma_{comp.}$), the temp. of the experiment, and the zinc content of the brass. The results of other workers are confirmed.—N. A.



YUDOVICH, S.Z., inzhener; SOKOLOV, L.D., dotsent, kandidat tekhnicheskikh nauk.

Correlation between the strength of steel and its plastic deformation rate. Stal' 7 no.2:127-130 '47. (MLRA 9:1)

1.Kuznetskiy kombinat i Sibirskiy metallurgicheskiy institut.
(Rolling (Metalwork)) (Steel--Testing) (Deformations (Mechanics))

SOKOLOV, L.D., dotsent.

Filling the flanges of shaped grooves of blooming passes. (MLRA 9:1)
Stal' 7 no.3:271-273 '47.

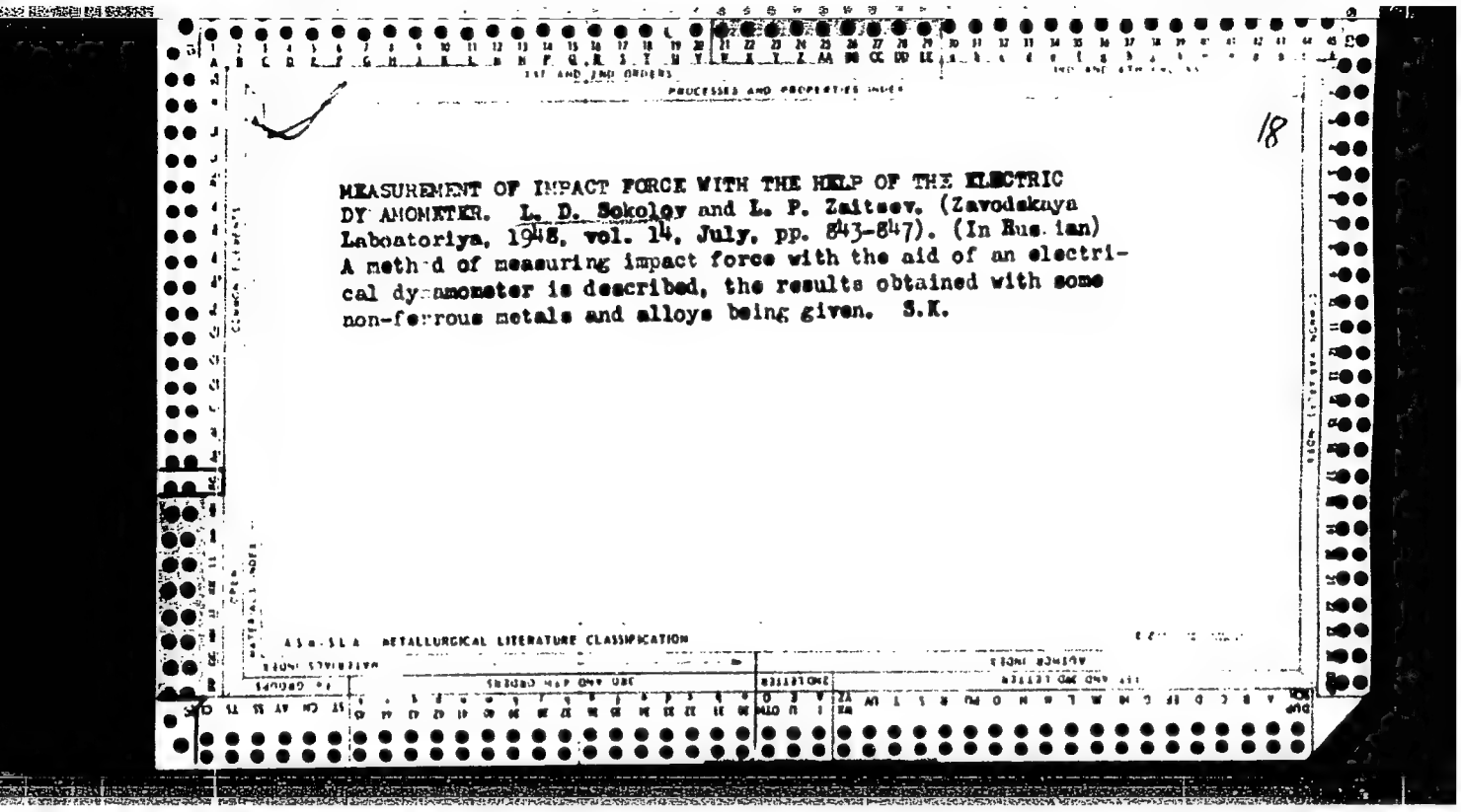
1.Sibirskiy metallurgicheskiy institut.
(Rolls (Iron mills)

SOKOLOV, L.D.

3
1-HJW
4E2c

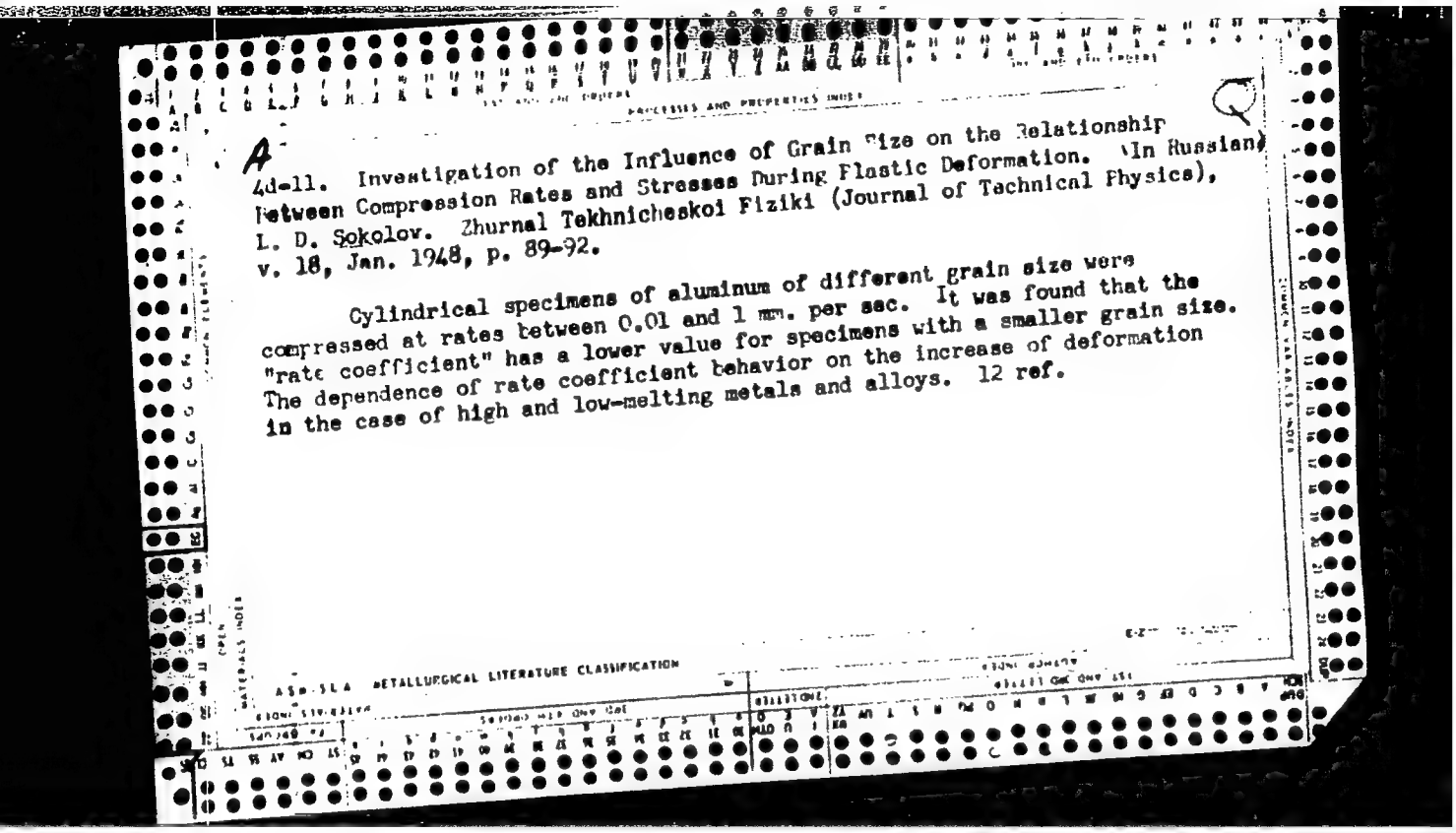
A STUDY OF THE DEPENDENCE OF THE RESISTANCE OF METALS AND AMORPHOUS SUBSTANCES TO PLASTIC DEFORMATION ON THE SPEED OF DEFORMATION AND THE TEMPERATURE. L. D. Sokolov. Translated from Zhur. Tekh. Fiz. 17, 543-8(1947). 7p.

Experiments have been carried out on the static (speeds from 0.01 to 1 mm/sec) and dynamic (average speed 2000 mm/sec) crushing of cylinders of Pb, Sn, Zn, Al, Cu, Ni, pitch, plasticine, and glass at various temperatures. The actual stress curves obtained make it possible to determine the relation between the speed of deformation and the stress, for various testing temperatures. It was found that the effect of the speed on the actual stress becomes stronger with increasing temperature and lower melting points of metals. The speed has a particularly strong effect on the resistance of amorphous substances to deformation. (auth)



18

MEASUREMENT OF IMPACT FORCE WITH THE HELP OF THE ELECTRIC DYNAMOMETER. L. D. Sokolov and L. P. Zaitsev. (Zavodskaya Laboratoriya, 1948, vol. 14, July, pp. 843-847). (In Russian) A method of measuring impact force with the aid of an electrical dynamometer is described, the results obtained with some non-ferrous metals and alloys being given. S.K.



4d-11. Investigation of the Influence of Grain Size on the Relationship Between Compression Rates and Stresses During Plastic Deformation. (In Russian) L. D. Sokolov. Zhurnal Tekhnicheskoi Fiziki (Journal of Technical Physics), v. 18, Jan. 1948, p. 89-92.

Cylindrical specimens of aluminum of different grain size were compressed at rates between 0.01 and 1 mm. per sec. It was found that the "rate coefficient" has a lower value for specimens with a smaller grain size. The dependence of rate coefficient behavior on the increase of deformation in the case of high and low-melting metals and alloys. 12 ref.

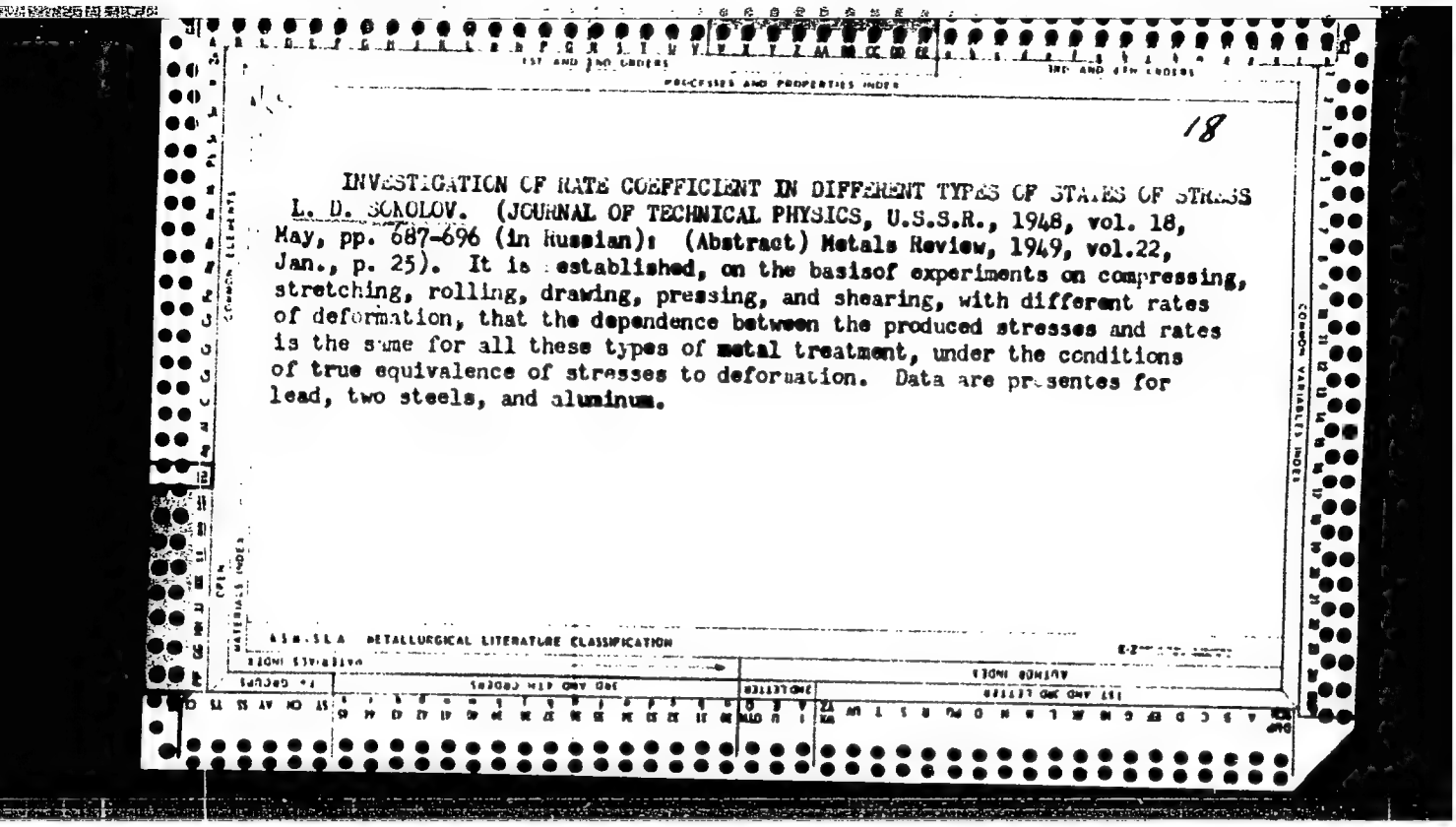
SOKOLOV, L. D.

3

4E2c

EFFECT OF DEGREE OF DEFORMATION ON THE RELATION BETWEEN STRESS AND SPEED. L. D. Sokolov. Translated from Zhur. Tekh. Fiz. 18, 93-7(1948). 7p.

From experiments of the crushing of cylindrical specimens of various metals at various speeds of deformation it has been found that the speed coefficient depends on the degree of deformation, decreasing as the degree of deformation increases for refractory metals at 20°C, and increasing with increasing deformation for easily melted metals at 20°C and above, and also increasing for refractory metals at high temperatures. (auth)



18

INVESTIGATION OF RATE COEFFICIENT IN DIFFERENT TYPES OF STATES OF STRESS
L. D. SOKOLOV. (JOURNAL OF TECHNICAL PHYSICS, U.S.S.R., 1948, vol. 18, May, pp. 687-696 (in Russian): (Abstract) Metals Review, 1949, vol.22, Jan., p. 25). It is established, on the basisof experiments on compressing, stretching, rolling, drawing, pressing, and shearing, with different rates of deformation, that the dependence between the produced stresses and rates is the same for all these types of metal treatment, under the conditions of true equivalence of stresses to deformation. Data are presentes for lead, two steels, and aluminum.

Sokolov, L. D.

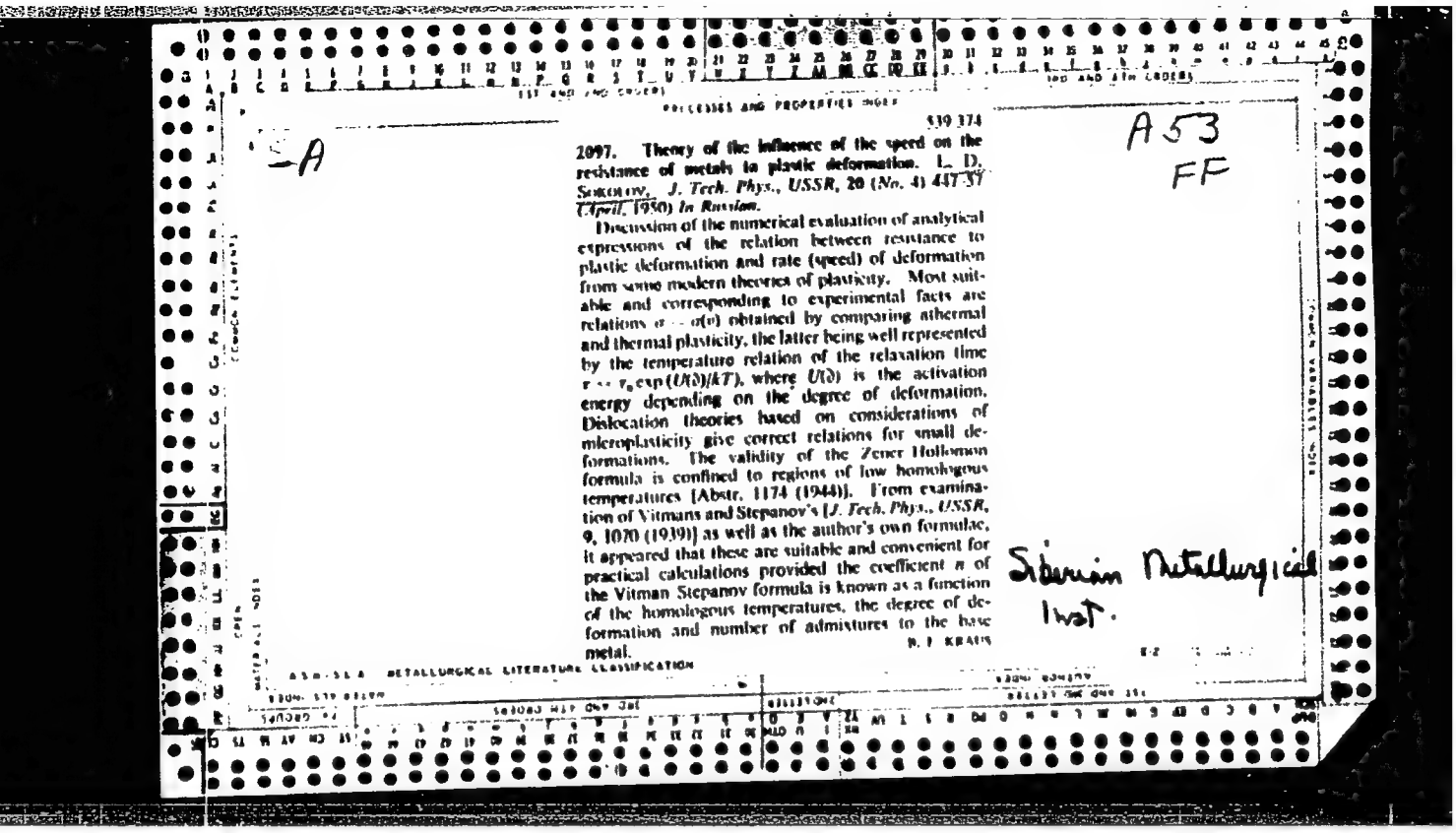
Sobolev, V. H., and Sokolov, L. D. On the pressure of a rigid die on a plastic medium. Akad. Nauk SSSR. Inženernyĭ Sbornik 5, no. 2, 21–24 (1949). (Russian)

Using (what appears to this reviewer) very bad engineering approximations, the authors determine the stress distribution and the change of the surface shape in a plate of finite thickness produced by indentation of a rigid stamp.

H. I. Ansoff (Santa Monica, Calif.).

Source: Mathematical Reviews, Vol 13 No.

Calculation of the resistance of metals to plastic deformation as a function of the rate of strain and temperature. L. D. Sokolov. *Doklady Akad. Nauk S.S.S.R.* **67**, 459-62(1949).—Extensive exptl. data on the plastic deformation of ferrous and nonferrous alloys previously reported were analyzed to det. which of the relations, (I) $\log \sigma = N \log v$, or (II) $\sigma = \sigma_0 + k \log v$ more accurately gives the relation between true stress and rate of strain v. Equation (II), used outside the U.S.S.R., was found to be valid only at low temps. for high melting metals. Equation (I) was found to be much better. In this equation the representation $N = b/B$ can be used, where b takes testing temp., T_t, into account, and B is an activation energy that depends on the strain, alloy content, and m.p. of the alloy, T_m. It was found convenient to use the expression, $N = mT_t/T_m$, where m depends on the strain and on the metal. The latter dependence shows that Ludwik's concept of homologous temp. is not exact. For calcg. the true stress of any alloy the equation can be used, $\log (\sigma/\sigma_0) = (mT_t/T_m) \log (v/v_0)$, where the pair of values σ_0 and v_0 can be obtained from a test at the usual strain rate of about 6×10^{-4} sec.$^{-1}$. Values of m for 4 steels, Pb, and Cu at strains from 10 to 50% are tabulated. The value for Cu increases gradually from 0.18 at 10% to 0.27 at 40%. 15 references. A. G. Guy



PROCESSES AND PROPERTIES INDEX

539.374

2097. **Theory of the influence of the speed on the resistance of metals to plastic deformation.** L. D. Sokolov. *J. Tech. Phys., USSR*, **20** (*No.* 4) 447-57 (*April*, 1950) *In Russian.*

Discussion of the numerical evaluation of analytical expressions of the relation between resistance to plastic deformation and rate (speed) of deformation from some modern theories of plasticity. Most suitable and corresponding to experimental facts are relations $\sigma = \sigma(v)$ obtained by comparing athermal and thermal plasticity, the latter being well represented by the temperature relation of the relaxation time $\tau = \tau_0 \exp(U(\delta)/kT)$, where $U(\delta)$ is the activation energy depending on the degree of deformation. Dislocation theories based on considerations of microplasticity give correct relations for small deformations. The validity of the Zener Hollomon formula is confined to regions of low homologous temperatures [Abstr. 1174 (1944)]. From examination of Vitmans and Stepanov's [*J. Tech. Phys., USSR*, 9, 1070 (1939)] as well as the author's own formulae, it appeared that these are suitable and convenient for practical calculations provided the coefficient n of the Vitman Stepanov formula is known as a function of the homologous temperatures, the degree of deformation and number of admixtures to the base metal.

N. J. KRAUS

A53
FF

Siberian Metallurgical Inst.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA 2

Rate and temperature dependence of the deformation resistance of single-phase metals. L. D. Sokolov. *Doklady Akad. Nauk S.S.S.R.* 70, 829–41 (1950); cf. *C.A.* 44, 5671h.—Analysis of previously obtained data on the deformation of Pb, Sn, and Cu from 20° to near the m.p. at rates of deformation from 6×10^{-4} to 12×10^{4} sec.$^{-1}$, led to the following conclusions: (1) The relation between the deformation resistance, σ, and the deformation velocity, v, is $\log \sigma = N \log v$, but the value of N changes for intermediate testing temps. and divides the curve into a prerecrystn. part with a larger N and a postrecrystn. part with a smaller N. (2) The change in N occurs at higher values of v as the testing temp. or the degree of deformation increases. (3) N increases in the prerecrystn. part of the curve with increasing temp. (4) With increasing degree of deformation N decreases in the postrecrystn. part and increases in the prerecrystn. part. (5) The value of M in the equation $\log \sigma = MT$, where T is the testing temp., also is variable under most conditions. However, at the low testing speeds frequently used, M may be const. over a wide temp. range. A. G. Guy

USSR/Physics - Elasticity 21 Dec 52

"Criterion Governing the Stressed State of a Diagram of Mechanical Deformability," L. D. Sokolov, Siberian Metallurgical Inst imeni Sergo Ordzhonikidze

"DAN SSSR" Vol 87, No 6, pp 905-908

Discusses practical applications of subject diagram representing velocity of deformation (up to 1/100 sec-1) versus ratio p/s (p is resistance to deformation, and s is true normal stress). Poses the following sample problem: Material is zinc, velocity of deformation is 1 mm/sec, deformation scheme is open clinching, coeff of friction is mu = 0.3, initial diam of cylinder is 20 mm, initial height is 10 mm, degree of deformation is 50% (true deformation 2). The problem is to determine whether the metal can endure a limiting deformation of 50% without collapse. Using the diagram the author finds an indeterminate picture relative to the possibility of obtaining the given deformation without collapse. Presented by Acad A. I. Nekrasov 27 Oct 52.

PA 240T92

240T92

SOKOLOV, L. D.

240T92

SOV/137-58-10-20859

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 73 (USSR)

AUTHORS: Veksin, I.N., Grebenik, V.M., Sokolov, L.D., Shirokov, V.N.

TITLE: An Investigation of the Bearing Capacity of a Nr 425 Cold-rolling Sheet Mill (Issledovaniye nesushchey sposobnosti listovogo stana 425 kholodnoy prokatki)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Chernaya metallurgiya, 1958, Nr 1, pp 160-178

ABSTRACT: The methods and results of measurements of rolling forces, stresses in the housings, and torque moments of the electric motor in cold rolling on a 425 sheet mill. The major measurements were taken on 2 stands. The electrical characteristics were taken simultaneously at 3 stands and the coiler. Measurement of the forces of rolling steel-strip grades 2, 10 SP, 85, 65, E3A, 50, U7A, U10A, 08PS, and 08KP in the cold and hot conditions is made by hydraulic capsules with wire strain gages. The hydraulic capsules are placed only under the left screwdowns (S). Measurement of stresses in the housings is made by wire resistance strain gages at 9 points which are shown by analysis to take the maximum stresses. In

Card 1/2

An Investigation of the Bearing Capacity (cont.)

investigating the electric drives, measurement was made of armature current, field current, and the voltage on the armature of the rolling-mill motors, coilers, and screwdowns. The S stresses do not exceed 80 t, and the stresses in the housings do not exceed the permissible level. The mean stressing of rolling-mill motors in terms of current, moment, and power is 30-50%.

1. Rolling mills--Performance 2. Rolling mills--Electrical properties M.Z.
3. Rolling mills--Test methods

Card 2/2

SOKOLOV, L.D., doktor tekhn.nauk, prof.

Some problems connected with the mechanical equipment of metallurgical plants. Izv. vys. ucheb. zav.; chern. met. no.3:145-153 Mr '58. (MIRA 11:5)

1.Sibirskiy metallurgicheskiy institut.
(Metallurgical plants--Equipment and supplies)

SOKOLOV, L.D., doktor tekhn. nauk, prof.; GREBENIK, V.M., kand. tekhn. nauk, dots.

Determining moments in straightening the material being rolled considering the metal temperature, the degree and speed of deformation. Izv. vys. ucheb. zav.; chern. met. no.4:171-180 Ap '58. (MIRA 11:6)

1. Sibirskiy metallurgicheskiy institut.
(Rolling (Metalwork))

SOKOLOV, L.D., doktor tekhn.nauk, prof.

Determining specific pressures for rolling in grooves. Izv. vys.ucheb.zav.; chern.met. no.6:109-116 Je '58. (MIRA 12:8)

1. Sibirskiy metallurgicheskiy institut. Rekomendovano kafedroy mekhanicheskogo oborudovaniya metallurgicheskikh zavodov Sibirskogo metallurgicheskogo instituta.
(Rolling (Metalwork))

BAKLUSHIN, I.L., inzh.; VEKSIN, I.N., inzh.; GREBENIK, V.M., kand.tekhn.nauk, dotsent; LYULENKOV, V.I., inzh.; SABANTSEV, V.P., inzh.; SOKOLOV, L.D., doktor tekhn.nauk, prof.; SHIROKOV, V.N., prof.

Equipment for use with resistance wire transducers. Izv.vys. ucheb.zav.; chern.met. no.6:149-156 Je '58. (MIRA 12:8)

1. Sibirskiy metallurgicheskiy institut. Rekomendovano kafedroy mekhanicheskogo oborudovaniya metallurgicheskikh zavodov Sibirskogo metallurgicheskogo instituta.
(Metallurgical plants--Equipment and supplies)
(Machinery--Testing) (Transducers)

SOKOLOV, L.D., prof., doktor tekhn.nauk; SHIROKOV, V.N., prof.; GREBENIK, V.M., dots., kand.tekhn.nauk; BAKLUSHIN, I.L., inzh.; VEKSIN, I.N., inzh.; LEDENEV, Yu.N., inzh.; SABANTSEV, V.P., inzh.

Investigation of rolling mill stands. Izv.v.ys.ucheb.zav.; chern. met. no.8:135-140 Ag '58. (MIRA 11:11)

1. Sibirskiy metallurgicheskiy institut.
(Rolling mills) (Strains and stresses)

SOKOLOV, L.D., doktor tekhn. nauk, prof.

Data on metallurgical progress gathered at the 1958 Brussels Fair.
Izv. vys. ucheb. zav.; chern. met. no.12:109-114 D '58.
(MIRA 12:3)

1.Sibirskiy metallurgicheskiy institut.
(Metallurgy)

18(3)
AUTHORS: Grebenik, V. M., Dashevskiy, Ya. V., Sokolov, L. D., Sharapov, V. A. SOV/163-59-1-15/50

TITLE: Mechanization of the Charging of Furnaces for Iron Alloys (Mekhanizatsiya zagruzki ferrosplavnykh pechey)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 68-72 (USSR)

ABSTRACT: In the Sibirskiy metallurgicheskiy institut (Siberian Institute of Metallurgy) a machine has been developed by the authors (Ref 1) with a rotating tube for charging furnaces for iron alloys. This is a short description of this machine. The operative part of the machine is the rotating metal tube with a diameter of 350 mm and a length of 4.5 m. The speed of this tube is 35-45 revs/min. The tube is mounted on a special truck which can travel on a platform. In figure 1 the three characteristic positions of the tube during charging are shown: 1) at an angle with the electrode. 2) Between the electrodes and 3) Pointing into the same direction as the electrode. The machine is equipped with five electric motors which provide the power for the following motions of the machine: rotation of the tube around its longitudinal axis, inclination (tilting) of the tube through an angle of 15-20°,

Card 1/3

forward and backward movement of the tube for charging and withdrawing the charger, (if the machine runs on rails,) the rotation of the tube around a vertical axis and the traveling on the platform. The capacity of the machine can reach 35 t/hour in consideration of the tube inclination and the speed. The first test model of such a machine was constructed according to a simplified design due to the proposals of V. F. Volkov and I. Ya. Pelenovskiy, workers of the Zaporozhskiy ferrosplavnyy zavod (Zaporozh'ye Iron Alloy Works). It was tested with one of the works furnaces. The results of the test runs proved to be satisfactory and demonstrated that this machine is capable of handling the charging of furnaces in accordance with technological requirements. A short summary of the experience collected in the operation of two model chargers is presented. There are 3 figures and 2 Soviet references.

ASSOCIATION: Sibirskiy metallurgicheskiy institut (Sibirskiy Institute of Metallurgy)

BAKLUSHIN, I.L., inzh.; VEKSIN, I.N., inzh.; GREBENIK, V.M., dotsent, kand. tekhn. nauk; LYULENKOV, V.I., inzh.; SABANTSEVM, V.P.; SOKOLOV, L.D., prof., doktor tekhn. nauk; SHIROKOV, V.N., prof.

Hydraulic calibration of 1500-ton power presses. Izv. vys. ucheb. zav.; chern. met. 2 no.4:113-121 Ap '59. (MIRA 12:8)

1.Sibirskiy metallurgicheskiy institut. Rekomendovano kafedroy mekhanicheskogo oborudovaniya metallurgicheskikh zavodov Sibirskogo metallurgicheskogo instituta.
(Hydraulic presses) (Calibration)

SOKOLOV, L.D., prof., doktor tekhn. nauk

Notes on metallurgy in China. Izv. vys. ucheb. zav.; chern. met. 2 no.4:151-155 Ap '59. (MIRA 12:8)

1.Sibirskiy metallurgicheskiy institut.
(China--Metallurgy)

BAKLUSHIN, I.L., inzh.; VEKSIN, I.N., inzh.; GREBENIK, V.M., dots., kand.tekhn.nauk; LYULENKOV, V.I., inzh.; SABANTSEV, V.P., inzh.; SOKOLOV, L.D., prof., doktor tekhn.nauk; SHIROKOV, V.N., prof.

Investigating the 740 cold rolling mill for thin sheets. Izv. vys.ucheb.zav.; chern.met. 2 no.8:143-148 Ag '59. (MIRA 13:4)

1. Sibirskiy metallurgicheskiy institut. Rekomendovano kafedroy mekhanicheskogo oborudovaniya metallurchiskikh zavodov Sibirskogo metallurgicheskogo instituta.
(Rolling mills)

SOKOLOV, L.D.; CHELYSHEV, N.A.

Investigating the operating conditions of 1100 blooming mill shears. Izv.vys.ucheb.zav.; chern.met. no.4:173-180 '60.
(MIRA 13:4)

1. Sibirskiy metallurgicheskiy institut.
(Rolling mills--Equipment and supplies)
(Shears(Machine tools))

SOKOLOV, L.D.; CHELYSHEV, N.A.

Investigating a straightening machine of a rail-rolling mill.
Izv.vys.ucheb.zav.; charn.met. no.6:196-198 '60.
(MIRA 13:7)

1. Sibirskiy metallurgicheskiy institut.
(Rolling mills--Equipment and supplies)

ALEYNIKOV, A.I.; BAKIUSHIN, I.L.; VEKSIN, I.N.; GREBENIK, V.M.; LYULENKOV, V.I.; SABANTSEV, V.P.; SEREGIN, S.A.; SOKOLOV, L.D.; SHIROKOV, V.N.

Investigating the mechanism of the rotation process of ferroalloy furnace baths. Izv. vys. ucheb. zav.; chern. met. no.8:181-187 '60. (MIRA 13:9)

1. Sibirkiy metallurgicheskiy institut.
(Rotary hearth furnaces) (Iron alloys)

SOKOLOV, L.D.; GREBENIK, V.M.

Determination of forces in blast furnace guns. Izv. vys. ucheb. zav.; chern. met. no.12:162-165 '60. (MIRA 14:1)

1. Sibirskiy metallurgicheskiy institut.
(Blast furnaces—Equipment and supplies)

AL'KOV, V.G.; SOKOLOV, L.D.

Determination of forces for the branding of hot-rolled products. Izv. vys. ucheb. zav.; chern. met. no.12:183-185 '60. (MIRA 14:1)

1. Sibirskiy metallurgicheskiy institut.
(Rolling (Metalwork)) (Marking devices)

S/148/61/000/002/007/011
A161/A133

AUTHORS: Sobolev, V. Kh., Sokolov, L. D.

TITLE: Mathematical analysis of the stressed state during tension

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 2, 1961, 93 - 95

TEXT: The author points out that neither the ultimate strength nor the true stress used lately for an analysis of plastic deformation processes are suitable indices, for the ultimate strength is only true within the uniform elongation range of the specimens, and the true stress is difficult to determine in experiments. A different method is suggested instead: to use the Körber - Melendorf rule, (Ref. 3: F. Körber. Mitt. Kais. Wilh. Inst. f. Eisenforsch., 3, I, 1922) for the approximate calculation of the true stress from the moment of the neck formation to the rupture of the tension test specimen. However, to obtain more accurate results, it is necessary to analyze the volumetric stressed state in the neck. The forces are presented schematically for the purpose. Two stresses are introduced:
a conditional

$$p = \frac{Q}{\pi r_o^2} \qquad (1)$$

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and an effective

$$q = \frac{Q}{\pi y^2} \qquad (2)$$

where r_o - the bar radius before elongation; y - the ordinate of the neck; Q - the tension force. The real stress is denoted with p_t. It is obvious that

$$p < q < p_t, \qquad (3)$$

and, denoting with a the neck radius in the thinnest spot, the effective stress will be

$$q_o = \frac{Q}{\pi a^2} \qquad (4)$$

The system is analyzed and the final formula arrived at is

$$q_o = \frac{p_t}{1 + \frac{d}{8\rho}} .$$

where ρ is the neck radius of curvature in the thinnest spot. The same formula had been obtained by Siebel (Ref. 4: E. Siebel. Berichte der Fachausschüsse des Vereins deutscher Eisenhüttenleute. Werkstoffausschussbericht, no. 71, 1925). It is obvious that q_o, d and ρ values determined by test have to be known to find the true stress. There are 2 figures and 4 references: 2 Soviet-bloc and 2 non-

S/148/61/000/002/007/011
Mathematical analysis of the stressed state during tension A161/A133

Soviet-bloc.

ASSOCIATION: Sibirskiy metallurgicheskiy institut (Siberian Metallurgical Institute)

SUBMITTED: February 19, 1960

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SOKOLOV, L.D.; CHELYSHEV, N.A.; ZHDANOV, I.A.; KAZANTSEV, A.A.

Investigating the wear resistance of bearing textolite in conditions of work on rolling mills. Izv. vys. ucheb. zav.; chern. met. no.2: 172-177 '61. (MIRA 14:11)

1. Sibirskiy metallurgicheskiy institut.
(Bearings (Machinery)) (Rolling mills)

ORLOV, D.M.; ZAYTSEV, L.P. [deceased]; LYULENKOV, I.S.; LYULENKOV, V.I.
SOKOLOV, L.D.

Efficient selection of counterweights for tower-type car dumpers.
Izv.vys.ucheb.zav.; chern.met. no.4:177-183 '61. (MIRA 14:4)

1. Sibirskiy metallurgicheskiy institut.
(Metallurgical plants--Equipment and supplies)
(Dumping appliances)

S/148/61/000/006/013/013
E193/E480

AUTHORS: Sokolov, L.D., Shirokov, V.N., Grebenik, V.M., Veksin, I.N., Baklushin, I.L., Lyulenkov, V.I., Sabantsev, V.P.

TITLE: Experimental and analytical determination of forces in cold rolling

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1961, No.6, pp.191-193

TEXT: In the course of an earlier investigation carried out by the present authors (Ref.1: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1959, 8), large discrepancies were found between the laboratory results and the operational data on forces acting on the rolls during cold rolling. It was revealed, however, in the course of further tests that in many cases the roll chocks had become worn (in some places to a depth of 0.4 mm) and it was postulated that this factor may have affected the load cell readings. In an attempt to find a way of eliminating this source of error, both during the calibration of the load cells and later in use, the effect of lead washere approximately 2 mm thick, placed under the dynamometers, was investigated. Fig.1 shows the

Experimental and analytical ...

experimental conditions: a - an annular washer supporting the load cell along its periphery; б - a solid washer under the central part of the load cell; в - no washer; г - a solid washer of the size equal to that of the load cell. On the right-hand side of Fig.1, the calibrating force is plotted against the load cell readings; most consistent results were obtained when a large solid washer was used (graph г). The latter method was employed in roll force measurements and the results compared with roll force values, calculated according to A.I.Tselikov and A.A.Korolev (Ref.2: Prokatnyye stany, Metallurgizdat, 1958). The results are tabulated. It will be seen that the difference reached occasionally 30 or even 37%, the experimental values being always lower than the calculated figures. One possible explanation of this effect is provided by the fact that the temperature of cold rolled metal increases. Although the strength of the carbon steels and constructional alloy steels increases on heating between 20 and 400°C, this increase takes place during cold rolling at certain rolling speeds only. According to M.I.Manjoine (Ref.5: Journal of the Iron and Steel, v.150, p.3, VI, 1947, 380),

the "ageing peak" is shifted towards higher temperatures when the steel is rolled at high rolling speeds, so that under these conditions the strength of steel between 0 and 400°C decreases with increasing temperature. Consequently, if the temperature attained by the metal during cold rolling at high speeds is 300°C, its resistance to deformation (particularly at heavy drafts) decreases, which explains the discrepancy observed. There are 2 figures, 1 table and 5 references: 4 Soviet and 1 non-Soviet. The reference to an English language publication reads as follows: M.I.Manjoine, Journal of the Iron and Steel, v.150, p.3, VI, 1947, 380.

ASSOCIATION: Sibirskiy metallurgicheskiy institut
(Siberian Metallurgical Institute)

SUBMITTED: March 30, 1960

SOKOLOV, L.D.; SHIROKOV, V.N.; GREBENIK, V.M.; VEKSIN, I.N.; BARLUSHIN, I.L.; LYULENKOV, V.I.; SABANTSEV, V.P.; KAZANTSEV, A.A.

Investigating stresses in models of steel pouring ladles. Izv. vys. ucheb. zav.; chern. met. 4 no.10:147-156 '61. (MIRA 14:11)

1. Sibirskiy metallurgicheskiy institut.
(Smelting furnaces--Equipment and supplies)
(Thermal stresses--Models)

ЗОКОЛОВ, L.S.

Impact strength calculations of metallurgical equipment parts. Izv. vys. ucheb. zav.; chern. met. 4 no.12:173-178 '61. (MIRA 15:1)

1. Sibirskiy metallurgicheskiy institut.
(Rolling mills)

SOKOLOV, L.D.

Deformation aging. Fiz.met.i metalloved. 14 no.6:904-909 D '62.
(MIRA 16:2)

1. Gor'kovskiy politekhnicheskiy institut im. A.A.Zhdanova.
(Metals—Hardening)

AM4016866 BOOK EXPLOITATION S/

Sokolov, Lev Dmitriyevich

Resistance of metals to plastic deformation (Soprotivleniye metallov plasticheskoy deformatsii) Moscow, Metallurgizdat, 1963. 284 p. illus., biblio. Errata slip inserted. 3650 copies printed. Publishing house editor: V. M. Gorobinchenko; Technical editor: P. G. Islent'yeva; Cover artist: N. A. Ignat'yeva.

TOPIC TAGS: plastic strain, strain aging, yield point, plastic flow, strain hardening, weakening, carbon steels, alloy steels, low temperature strain resistance, dislocation theory, rate of strain, strain temperature, strain diagram

PURPOSE AND COVERAGE: This book is intended for scientific personnel and engineers and technicians at institutes, design organizations, and plants in the metallurgical and machine-building industries; it also may be useful to students at corresponding vuzes. The temperature and rate dependences of the strain resistance of metals are analyzed on the basis of dislocation concepts. The mechanisms of strain aging of metals are presented, as well as experimental data for many technically pure metals and alloys. The author expresses his gratitude

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to the Chief of the Bibliography Section of the Siberian Metallurgical Institute, B. V. Yagunov, and to Engineers O. M. Goncharov, D. F. Moldavskiy, M. V. Shamov, V. G. Kachalkin, O. A. Kolotov, L. A. Barkov, and V. A. Skudnov.

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Card 5/5

SOKOLOV, L.D. (Gor'kiy)

Temperature-rate dependence of the deformation resistance of metals. Izv. AN SSSR. Otd. tekh. nauk. Met. i gor. delo no.3:147-153 My-Je '63. (MIRA 16:7)

(Deformations (Mechanics))
(Metals, Effect of temperature on)

SOKOLOV, L.D.

Investigating the temperature-time dependence of the resistance to deformation in metals and steel. Izv. vys. ucheb. zav.; chern. met. 6 no.8:93-101 '63. (MIRA 16:11)

1. Gor'kovskiy politekhnicheskiy institut.

SOKOLOV, L.D.

Resistance to deformation of carbon steels. Izv. vys. uchab. zav.; chern. met. 6 no.10:62-68 '63. (MIRA 16:12)

1. Gor'kovskiy politekhnicheskiy institut.

S/126/63/015/001/015/029
E193/E383

AUTHOR: Sokolov, L.D.

TITLE: The role of grain size and hardening and softening processes on the strain-rate effect at various points of the stress/strain diagram

PERIODICAL: Fizika metallov i metallovedeniye, v. 15, no. 1, 1963, 109 - 112

TEXT: A critical analysis of a large number of published experimental data is presented with the view of elucidating the nature of the effect of preliminary treatment, grain size, temperature and strain rate on the shape of the stress/strain diagram of metals - both those that do and those that do not have a clearly defined yield point. The author is concerned mainly with the maximum present on the stress/strain diagrams of metals such as Pb, Cu, Al, etc. He concludes that - in analogy to low-carbon steels ar some other metals with BCC lattice - the effect of strain rate r the shape of the strain/stress diagram in the low (10-20% strain range) is associated either with the barrier effect or with the complexity effect. The position of the yield

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SOKOLOV, L.D., doktor tekhn. nauk, prof.

Effect of the chemical composition of steels on their strength characteristics at various temperatures. Stal' 23 no.10:930-933 O '63. (MIRA 16:11)

1. Gor'kovskiy politekhnicheskiy institut.

ACCESSION NR: AP4017760 S/0148/64/000/002/0080/0085

AUTHOR: Sokolov, L.D.

TITLE: Deformation Resistance of Pearlitic Steel

SOURCE: IVUZ. Chernaya metallurgiya, no.2, 1964, 80-85

TOPIC TAGS: deformation resistance, pearlitic steel, nickel, carbon silicon, nickel, hot machining, work hardening, uniaxial deformation, temperature time diagram, steel

ABSTRACT: The preser' paper is a continuation of two previous investigations on the defo.mation resistance observed in 100 types of pearlitic steel. Annealed cylindrical specimens 10mm diameter and 20mm high were tested. Considering the temperature-time relationship of actual stress, it is concluded that in the region of cold working, the ordinary uniform decrease of stress at $v = 5.10^{-4}sec^{-1}$ is distorted by rising temperatures because of the occurrence of strain aging. Carbon and nickel were found to exert an appreciable influence on decreasing the maximum of strain aging. A uniform gradual decrease in

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ACCESSION NR: AP4017760

the deformation resistance was observed beyond the region of strain aging in all specimens as temperatures were increased. Temperature-time diagrams of actual stress reveal recrystallization inflections. The temperature and the deformation rate at the time of their appearance were negligibly affected by the composition of the specimens. The deformation rate remains almost unchanged, with a content of alloying elements below 2 to 3 percent. Si and Al are an exception as they tend to reduce the deformation rate in comparison with carbon steel. In the region of hot machining all pearlitic steel specimens submitted to uniaxial deformation displayed the same temperature-time dependence. "The collaboration of N.G. Ivashin, I.S. Turchenkov, L.P. Zaytsev (deceased), O.N. Goncharov, and Sung I-K'ang in carrying out tests and anlyses is acknowledged." Orig. art. has 2 figures and 1 table.

ASSOCIATION: Gor'kovskiy politekhnicheskiy institut (Gor'ky Polytechnic Institute)

SUBMITTED: 19Sep63 DATE ACQ: 12Mar64 ENCL: 00

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BAKLUSHIN, I.L.; VEKSIN, I.N.; LYULENKOV, V.I.; SABANTSEV, V.P.; SOBOLEV, A.P.; SOKOLOV, L.D.; SHIROKOV, V.N.

Analyzing the reserve strength of the 1100 blooming mill stand in the Kuznetsk Metallurgical Combine. Izv. vys. ucheb. zav.; chern. met. 7 no.2:205-212 '64. (MIRA 17:3)

1. Sibirskiy metallurgicheskiy institut.